

REMARKS:

REMARKS REGARDING CLAIM TO PRIORITY UNDER 35 U.S.C. §119(b):

Applicant acknowledges the requirement to supply a certified copy of the Swedish priority document and will do so in the future.

REMARKS REGARDING DOCUMENTS CITED IN APPLICATION:

The documents cited in the specification are proffered relative to the background of the invention have not been cited in an IDS as their relevance is considered to be limited to that purpose.

REMARKS REGARDING CLAIM AMENDMENTS:

Claims 2 and 12 have been amended to overcome rejection under 35 U.S.C. §112 second paragraph. It is believed that these claims are in condition for allowance. Consequently applicants request reconsideration and withdrawal of rejection of claims 2 and 12 of the present invention.

Applicants further believe that claims 1 – 12 are in condition for allowance in light of the following discussion regarding rejection of claims 1 – 5, 9, 10 and 12 for which reconsideration is requested followed by withdrawal of rejection of these claims under 35 U.S.C. §102.

Entry of new claim 19 is respectfully requested. Support for new dependent claim 19 exists in paragraph 6 of the application, in the third sentence before the end of the paragraph.

Following withdrawal and cancelling of claims 13 – 18, claims 1 – 12 and 19 are pending in the present application.

IN RESPONSE TO THE OFFICE ACTION:

REJECTION UNDER 35 U.S.C. § 112:

The Office Action includes rejection of claims 2 and 12 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 2 and 12 have been amended to overcome rejection and to provide antecedent basis, as required by the Examiner.

Following amendment of claims 2 and 12, applicants request reconsideration and withdrawal of rejections under 35 U.S.C. §112.

REJECTION UNDER 35 U.S.C. § 102:

The Office Action indicates rejection of claims 1 – 5, 9 – 10 and 12 under 35 U.S.C. 102(b) as being anticipated by Rauch ‘510.

Rauch teaches a “Coasting Downshift Control Strategy” (Title) for smooth gear change from one gear ratio to a lower gear ratio during coasting downshift with the engine throttle closed (Abstract). The reference teaches how to avoid grinding the gears during a gear change (e.g. column 1, lines 36 – 45) by downshifting at each of three representative conditions of engine rate of revolution (700 rpm or 900 rpm or 1200 rpm). Avoidance of noisy gear-change requires coasting downshift to occur when the vehicle is traveling in a range of speeds corresponding to a selected engine rpm. For example, at 700 rpm the range of speeds is about 6 mph (see FIG. 4) and when the engine revolves at 1200 rpm the range of speeds is about 10 mph. This provides an indication of the margin for gear-change error at a given engine rpm. Teachings of Rauch suggest that the range of speeds for smooth gear change increases at higher engine rpm.

In the Summary of the Invention, for example at column 2, lines 5 – 7 Rauch teaches that “The invention comprises a control system and strategy that permits coasting downshifts to occur with minimal torque disturbance.” (i.e. grinding of the gears). Further, at column 2, lines 12 – 17 the reference states, “The (gear) shift point is altered only when the desired engine speed is greater than the base idle speed; for example, when the base idle speed is increased following a cold start. The shift points are adjusted by using a shift point adder until the need for an increase in the desired engine speed is no longer present.” (i.e. when the engine has warmed to its normal

operating temperature). This suggests that the increase in engine rpm and need to move the point or vehicle speed at which coasting downshift occurs is temporary as indicated by Rauch at column 2, lines 18 – 23, which states, “In practicing the invention, the engine speed is monitored, and the engine idle speed is increased to a value greater than normal idle speed during cold engine operation as the duty cycle for the duty cycle controlled idle bypass air valve is raised. Factors other than temperature also affect the idle speed.”

Further evidence that adjustment of the point of coasting downshift occurs primarily in response to a cold engine is found at column 5, lines 58 – 64 of the reference wherein, “The altering of the shift schedule occurs only when the engine is in an operating mode with a minimal throttle setting following a cold start. This eliminates problems that would be associated with delayed upshifts if the strategy of adjusting the coasting downshift points were to be used during normal engine operation after cold start conditions no longer exist.”

Rauch, at Column 5, lines 39 – 64 in the Detailed Description, teaches, “In the plots of FIGS. 4, 5 and 6, each plot is made at a different engine speed. In each of the plots, the points shown at A1, A2 or A3 and at B1, B2 or B3 define the boundaries for the optimal coast downhill points. These boundaries change as the engine speed changes. As engine speed increases, these points move to the right. Point A1 in FIG. 4, where the engine is at about 700 rpm, is at approximately 17 mph. When the engine speed is 900 rpm, as seen in FIG. 5, point A2 is at approximately 19 mph. When the engine is operating at 1200 rpm as seen in FIG. 6, point A3 is at approximately 27 mph.

Rauch appears to teach a single mode of operation for a normally operating engine where the idle speed is about 700 rpm and smooth coasting downshift is possible at about 17 mph. Accomplishing a smooth gear change before the engine warms to normal operating temperature requires a higher vehicle speed and a temporary increase in engine rpm. However, the increase in rpm is added to the normal idle speed as will be addressed in the following discussion.

Having reviewed the teachings of Rauch, applicants submit that the basis for claims rejection is unclear because the Examiner does not appear to rely on clearly cited portions from Rauch, but instead selects points throughout the reference as being relevant to the present invention. For there to be anticipation under 35 U.S.C. § 102, “each and every element” of the claimed invention must be found either expressly or inherently described in a single prior art

reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) and references cited therein. Evidence will be provided to show that the Office Action statement of rejection of claims 1 – 5, 9, 10 and 12, over the reference of Rauch, does not appear to meet the standard of anticipation of claims under 35 U.S.C. §102.

With reference to Claim 1, the Office Action states as follows:

Rauch teaches a vehicle comprising a drivetrain, having an internal combustion engine 36 and a gearbox 14 coupled to the internal combustion engine, and a control unit 16 for automatic selection as a function of the current rotational speed of an input shaft to the gearbox (Vsp = IS x GR), in which the control unit has a first operating mode (cold start) with a first working speed range defined by a first lower limit A3 for downshifting to a gear with a higher transmission ratio, wherein the control unit has a second operating mode with a second working speed range defined by a second lower limit A1 for downshifting to a gear with a higher transmission ratio, in which the second limit A1 is lower than the idling speed (1200 rpm for cold start) of the internal combustion engine and is equal to a lower rotational speed than the first lower limit (A1 < A3) (emphasis added).

Applicants request clarification of the source and purpose of the equation:

$$Vsp = IS \times GR$$

A search of Rauch failed to reveal either the equation itself or the abbreviations Vsp, IS or GR. There is nothing in the Office Action providing meaning to the equation or its relationship to the limitation of “an input shaft” recited in claim 1. Rauch is silent concerning the limitation of claim 1 that refers to “rotational speed of an input shaft to the gearbox (9).”

Further evidence that the reference fails to anticipate the present invention is apparent in relation to a “first operating mode” followed in the statement of rejection by a parenthetical “(cold start).” The parenthetical term adds a limitation that is not recited by claim 1 or implied by the present specification.

Selection of A3 from FIG. 6 and A1 from FIG. 4 to represent the first and second lower limits recited in claim 1 of the present invention appears to reflect the use of knowledge of the present application for selecting, from the reference, variables that could appear relevant to applicants’ disclosure.

According to the Office Action A1 (FIG. 4) represents the second lower limit recited in claim 1 of the present invention. Rauch teaches that A1 is the optimal downshift point (i.e. the lower limit for downshifting) when the engine is operating at an idle speed of 700 rpm (See

column 2, lines 44 – 46 and column 4, lines 54 – 67 of Rauch). Selection of A1 as the second lower limit (determined at 700 rpm) may appear to fit claim 1 of the present invention because an engine idling speed of 700 rpm is lower than 1200 rpm needed by an internal combustion engine operating at low temperature.

Applicants previously addressed the issue , in the Office Action, that a cold engine condition is not required by claim 1 of the present invention. Evidence from the reference clarifies that an idle speed of 1200 rpm is not a normal idle speed based on the statement of Column 2, lines 18 – 23 as follows:

“In practicing the invention, the engine speed is monitored, and the engine idle speed is increased to a value greater than normal idle speed during cold engine operation as the duty cycle for the duty cycle controlled idle bypass air valve is raised. Factors other than temperature also affect the idle speed.” (emphasis added).

In other words, an engine operating at 1200 rpm is not operating at the engine idle speed, but at a speed that facilitates smooth downshifting when the engine is cold. A conclusion that 700 rpm being lower than 1200 rpm satisfies the modes of the present invention does not appear to follow from the teachings of Rauch. Request is respectfully made for a reasoned explanation of how such a conclusion could be drawn without knowledge of the present invention.

It appears that Rauch fails to anticipate the subject matter of claim 1 because the reference is silent regarding a second lower limit that is lower than the normal idling speed of the internal combustion engine. The reference teaches a single mode of operation for a normally operating engine. Deviation from that single mode is operative only to avoid noisy gear change, when the engine is cold.

The present invention reduces the number of gearshifts encountered when operating the vehicle under low engine load (paragraph 6). This problem is solved by lowering the lower limit for downshifting and thus enlarging the working speed range (see new claim 19). According to Rauch, the range for smooth coasting-downshift at 1,200 rpm, i.e. A3 to B3 of FIG.6, is larger than the range at 700 rpm, i.e. A1 to B1 of FIG. 4, which is opposite to the present invention wherein the working speed range increases in the second operating mode or below the idling speed of the engine.

Review of at least the Title, Field of the Invention, and Summary of Rauch clearly reveals the objective of improving the smoothness of coasting downshift including shifting gears during cold engine operation. The reference teaches that the lower limit for downshifting is raised when the speed of the engine is increased (See column 5, lines 42 – 57 of Rauch), i.e. during temporary operation of the engine at low engine temperature.

Rauch's approach for optimal coasting downshift has the effect of reducing the working speed range, as one of ordinary skill in the art would recognize. The teachings of Rauch provide little incentive for lowering the lower limit for downshifting below the idle speed of the engine.

Lacking teachings for elements of claim 1, including "rotational speed of an input shaft," and "a second operating mode," Rauch is ineffective as a basis for anticipation of claim 1 of the present invention.

In view of the above, applicants request reconsideration and withdrawal of the rejection of claim 1 under 35 U.S.C. §102(b).

The following information addresses rejection claims other than claim 1 of the present invention. However, all of the involved claims depend from claim 1. For reasons presented above, applicants believe that claim 1 is allowable. Claims dependent from claim 1 should likewise be allowed.

With regard to claim 2, as discussed previously, Rauch does not teach the second working speed range or storage of associated information.

With regard to claim 3, Rauch fails to teach the second operating mode or conditions associated therewith.

With regard to claim 4, Rauch does not teach selection of first or second operating modes.

With regard to claim 5, evidence has been presented to show that Rauch does not teach a second operating mode as claimed by the present invention. The reference is similarly silent regarding component control during second mode operation.

With regard to claim 9, Rauch is silent regarding an input shaft.

With regard to claim 10, Rauch is silent concerning a second lower limit and thereby fails to teach an appropriate condition wherein downshifting is permitted.

With regard to claim 12, Rauch does not teach first and second operating modes or elements indicating selection of a preferred mode.

Having provided evidence that the single reference of Rauch ('510) fails to expressly or inherently teach "each and every element" of the claimed invention, applicants believe the application is in condition for allowance and request reconsideration and withdrawal of the rejection of claims 1 – 5, 9, 10 and 12 under 35 U.S.C. §102(b).

ALLOWABLE SUBJECT MATTER

Applicants acknowledge with appreciation that Claims 6 – 8 and 11 represent allowable subject matter, overcoming objection if rewritten in independent form including all of the limitations of the base claim and any intervening claims. It is believed that claims 1 - 12 should be allowed for reasons given above. Also new claim 19 is believed to be allowable. Amendment of claims 6 – 8 and 11 will be re-assessed after further examination of pending claims on the merits.

CONCLUSION

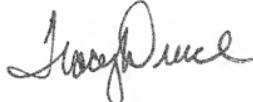
Applicants have made an earnest attempt to respond to all the points included in the Office Action and, in view of the above, submit that the application is in condition for allowance. Consequently, request is respectfully made for reconsideration of the application and notification of allowance of claims 1 – 12 and 19 in the next paper from the Office.

The undersigned representative requests any extension of time that may be deemed necessary to further the prosecution of this application.

The undersigned representative authorizes the Commissioner to charge any additional fees under 37 C.F.R. 1.16 or 1.17 that may be required, or credit any overpayment, to Deposit Account No. 14-1437, referencing Attorney Docket No.: 0173.0054.PCUS00.

In order to facilitate the resolution of any issues or questions presented by this paper, the Examiner may directly contact the undersigned by phone to further the discussion.

Respectfully submitted,



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